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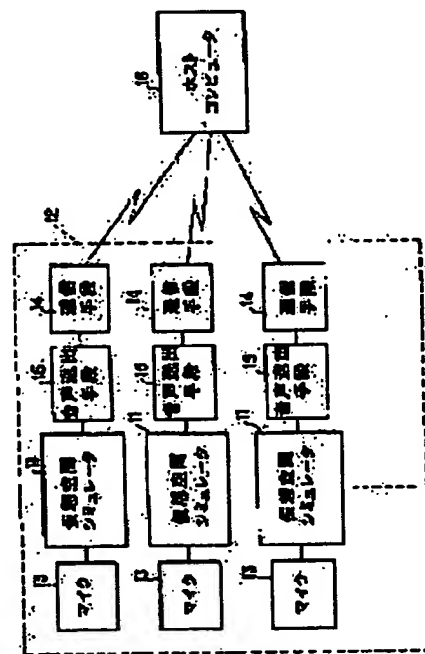
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## (54) VOICE VIRTUAL LOCATION SYSTEM

## (57)Abstract:

PURPOSE: To locate utterance on a virtual space and to improve the reality of the virtual space by associating the actual voices uttered by an operator and the images displaying the three-dimensional space.

CONSTITUTION: This system has virtual space simulator (virtual space forming space) 11 for forming the virtual space that the operator imagines, a microphone (voice inputting means) 13 to which the voices uttered by the operator are inputted, communication means 14 which execute data transmission between the virtual space simulators 11 and voice transmission means 15 which transmit the voice data c at every prescribed unit transmission time based on the voices together with the position data a and state data b (virtual data) at every prescribed unit transmission time in data transmission. The system locates the operator's voices inputted to the microphone 13 to the virtual position on the virtual space.



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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the voice virtual normal position system which makes voice orientate on the virtual space which an operator supposes corresponding to a virtual location.

[0002]

[Description of the Prior Art] Conventionally, by connecting between two or more virtual space simulators (virtual space means forming) with a communication link, a virtual space common to each virtual space simulator is formed, and the virtual space simulator system by which each operator who operates each virtual space simulator can share the same virtual space is known.

[0003] The virtual space formed by the virtual space simulator is formed of the three-dimensions (3-dimension) space which can experience the so-called virtual reality. In each virtual space simulator, the operator on a virtual space can be made to take action of arbitration because an operator operates a joy stick etc., for example, and voice corresponding to action is \*\*\*\*(ed) by coincidence.

[0004]

[Problem(s) to be Solved by the Invention] However, it did not pass for it to be patternized from the generation source to which voice was beforehand set by the virtual space simulator in the virtual space simulator system tied by old communication link, and come out, but the image which displays the actual voice which an operator utters, and three-dimensions space was not related, but there was a trouble that the reality of a virtual space was missing.

[0005] This invention is made in view of the above-mentioned trouble, and by relating the image which displays the actual voice which an operator utters, and three-dimensions space, the purpose makes voice orientate on a virtual space, and is to offer the voice virtual normal position system which raises the reality of a virtual space.

[0006]

[Means for Solving the Problem] Virtual space means forming for the above-mentioned purpose to form the virtual space which an operator supposes, A voice input means by which the voice which said operator utters is inputted, and the means of communications which performs data transmission of said virtual space means forming, It has a voice sending-out means to send out the voice data for said every predetermined unit air time based on said voice with the virtual data of said virtual space, for every predetermined unit air time in data transmission. It is attained by the voice virtual normal position system characterized by making the virtual location on said virtual space orientate an operator's voice inputted into said voice input means.

[0007]

[Function] According to this invention, on the virtual space which the operator formed in virtual space means forming supposes The voice data based on the voice which the operator inputted into the voice input means utters Since it is sent out for every predetermined unit air time with the virtual data of a virtual space for every predetermined unit air time in data transmission by the voice sending-out means, the voice which the operator uttered After making the virtual location on an appropriate virtual space orientate, it will be outputted to other virtual space means forming, and it will link to coincidence with the image based on virtual data.

[0008]

[Example] Hereafter, the voice virtual normal position system by one example of this invention is explained with reference to a drawing. As shown in drawing 1, the voice virtual normal position system 10 has the virtual space simulator (virtual space means forming) 11, the simulator group 12 in which two or more virtual space simulators 11 were formed, the microphone (voice input means) 13 formed every virtual space simulator 11, respectively, means of communications 14 and the voice sending-out means 15, and the host computer 16.

[0009] This voice virtual normal position system 10 forms the common virtual space each [ which constitutes the simulator group 12 ] virtual space simulator 11 of every, and each operator who operates each virtual space simulator 11 can share the same virtual space. As shown in drawing 2, the virtual space simulator 11 has CPU11a as a control means, and outputs the video output and voice output for carrying out image display of the virtual space which consists of three-dimensions (3-dimension) space by data processing of CPU11a based on the virtual data to input. The so-called virtual reality can be experienced by this virtual space.

[0010] Virtual data consists of condition data, such as location data on the virtual space of the operator supposed which an operator emits, the desired migration direction, and passing speed or a desired action class, and can make the operator supposed on the virtual space take desired action. In each virtual space simulator 11, when an operator operates the input means of joy stick 17 grade, location data and condition data are inputted through decoder 17a. Similarly, location data and condition data can be inputted through A/D-converter 18a etc. also by the position sensor 18 which detects an operator's displacement condition (refer to drawing 2).

[0011] Moreover, Image Information is outputted to head mounted display 19b etc. as a three dimensional image through image output unit 19a. Similarly, voice data is outputted to loudspeaker 20c etc. as voice through audio output device 20a and virtual space voice normal position count equipment 20b (refer to drawing 2). The simulator group 12 is constituted by the host computer 16 to which two or more virtual space simulator 11 and each virtual space simulator 11 were connected through means of communications 14 (refer to drawing 1), and I/O of data is possible for each virtual space simulator 11 and a host computer 16 to mutual.

[0012] The microphone 13 is formed in every [ with which an operator equips ] head mounted display 19b, and extracts the voice which the operator who operates the virtual space simulator 11 utters. The extracted voice serves as voice data digitized through A/D-converter 13b, such as noise filter 13a. It consists of ISDN, the telephone line, etc., and means of communications 14 connects the voice sending-out means 15 and host computer 16 which are the data output section from the virtual space simulator 11, and forms the data transmission line which performs data transmission of virtual space simulator 11 comrades.

[0013] The voice sending-out means 15 makes one packet the data of the 1 field which divided the data stream into fixed magnitude, and has transmitted on the occasion of data forwarding for every packet which is a division part, for example, consists of 1 / 60 seconds which is predetermined unit air time. Therefore, voice data

c which divided the voice data inputted at any time through a microphone 13 with the location data a obtained by data processing of CPU11a and the condition data b for every field, and was obtained is transmitted for every field. d is a header (HEADER) among drawing and e is a checksum (CHECK SUM) or parity (PARITY). [0014] Namely, voice data c for every predetermined unit air time is sent out with the location data a and the condition data b for every predetermined unit air time in data transmission. For this reason, since voice data c can be extracted in the real time and it can reappear in the real time, the voice which the operator uttered is outputted after making the appropriate location on a virtual space orientate, can use the location data a and the condition data b for coincidence, and can also make an image link to it.

[0015] In addition, the voice sending-out means 15 has compression / expanding function to perform compression and expanding of voice data, can elongate the inputted voice data of a compression condition, and can return it to the original condition while it is faced sending out voice data c for every field and compresses voice data c if needed with the location data a and the condition data b. Next, an operation of a voice virtual normal position system is explained.

[0016] First, as shown in Fig. 4, each operator sits on a chair etc., equips with head mounted display 19b etc. each one, will be in the condition of the virtual space by the virtual space simulator 11 which can be experienced, respectively, and will constitute the simulator group 12. Each operator operates joy stick 17 grade, and experiences the virtual state on the virtual space by which image display was carried out to head mounted display 19b etc.

[0017] Under the present circumstances, the common virtual data is sent to each virtual space simulator 11 through the host computer 16, and each operator will share the same virtual space in each virtual space simulator 11 for it. Then, if the operator in a virtual state utters voice, voice will be set to voice data c which was extracted with the microphone 13 and which it was back-digitized and was divided for every field, and will be transmitted [ with the location data a and the condition data b ] to a host computer 16 through means of communications 14 from the voice (refer to drawing 3 ) sending-out means 15 for every field.

[0018] On the occasion of data forwarding, voice data c is compressed if needed that it should transmit with the location data a and the condition data b. By the way, more effective three-dimensions-ization is attained by digitizing voice data, and compressing by the need and communicating. That is, by sending out the exact data which have a high frequency component completely, without tone quality deteriorating, since a location becomes clear especially on the occasion of three-dimensions-izing when it orientates the more, the more there is much RF corresponding to a reflected wave, in case it three-dimensions-izes on the virtual space simulator 11, a required SN ratio and frequency characteristics can be acquired.

[0019] And as for the host computer 16 which voice data c in every frame inputted, voice data c in every frame is similarly transmitted to other virtual space simulators 11 through means of communications 14. When voice data c in every frame inputted into other virtual space simulators 11 is compressed by the voice sending-out means 15, after being elongated and being returned to the original condition, it separates into the location data a and the condition data b, and voice data c, and each data is inputted into audio output device 20a and virtual space voice normal position count equipment 20b.

[0020] Inputted voice data c is outputted to loudspeaker 20c etc., after making the appropriate location on a virtual space orientate voice based on the location data a and the condition data b with audio output device 20a and virtual space voice normal position count equipment 20. Therefore, after making the location on an appropriate

virtual space orientate, the voice which the operator uttered will be outputted to other virtual space simulators 11, and, naturally will link with the image outputted to coincidence at head mounted display 19b etc. based on the location data a and the condition data b.

[0021] Thus, since the image and voice which the location on the audio normal position and the virtual space of an image links to real time, and have two or more operators in each location in the same virtual space (normal position) by communication link can be enjoyed, participants can talk in a voice in a virtual space. In addition, more effective three-dimensions-ization is attained, without voice deteriorating.

[0022] Therefore, since the image which displays the actual voice which an operator utters, and three-dimensions space can be related and voice can be made to orientate on a virtual space, compared with the conventional virtual space simulator whose system was the separated form, improvement in the reality of a virtual space and improvement in communication of actual voice are attained only by only the sound generated from an image and system side being shown.

[0023] Moreover, it can also become possible to perform and output sound field processing (for example, echo processing) to one's voice, and it can raise a reality more in this case. In addition, not only the above-mentioned example but various deformation is possible for this invention, for example, it may carry out direct continuation of each virtual space simulator 11, without minding a host computer 16.

[0024]  
[Effect of the Invention] According to this invention the above passage, by relating the image which displays the actual voice which an operator utters, and three-dimensions space, voice can be made to be able to orientate on a virtual space and the reality of a virtual space can be raised.

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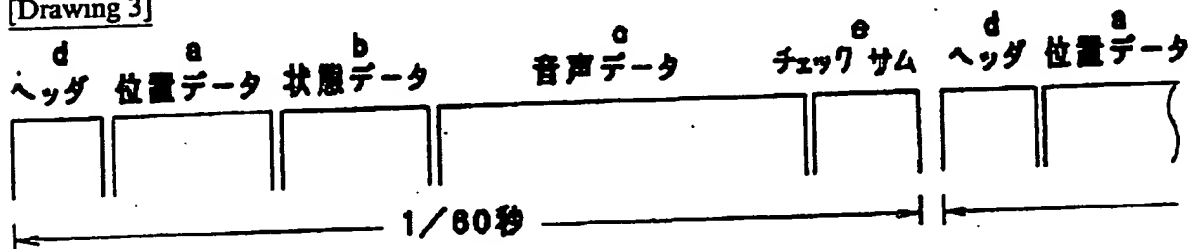
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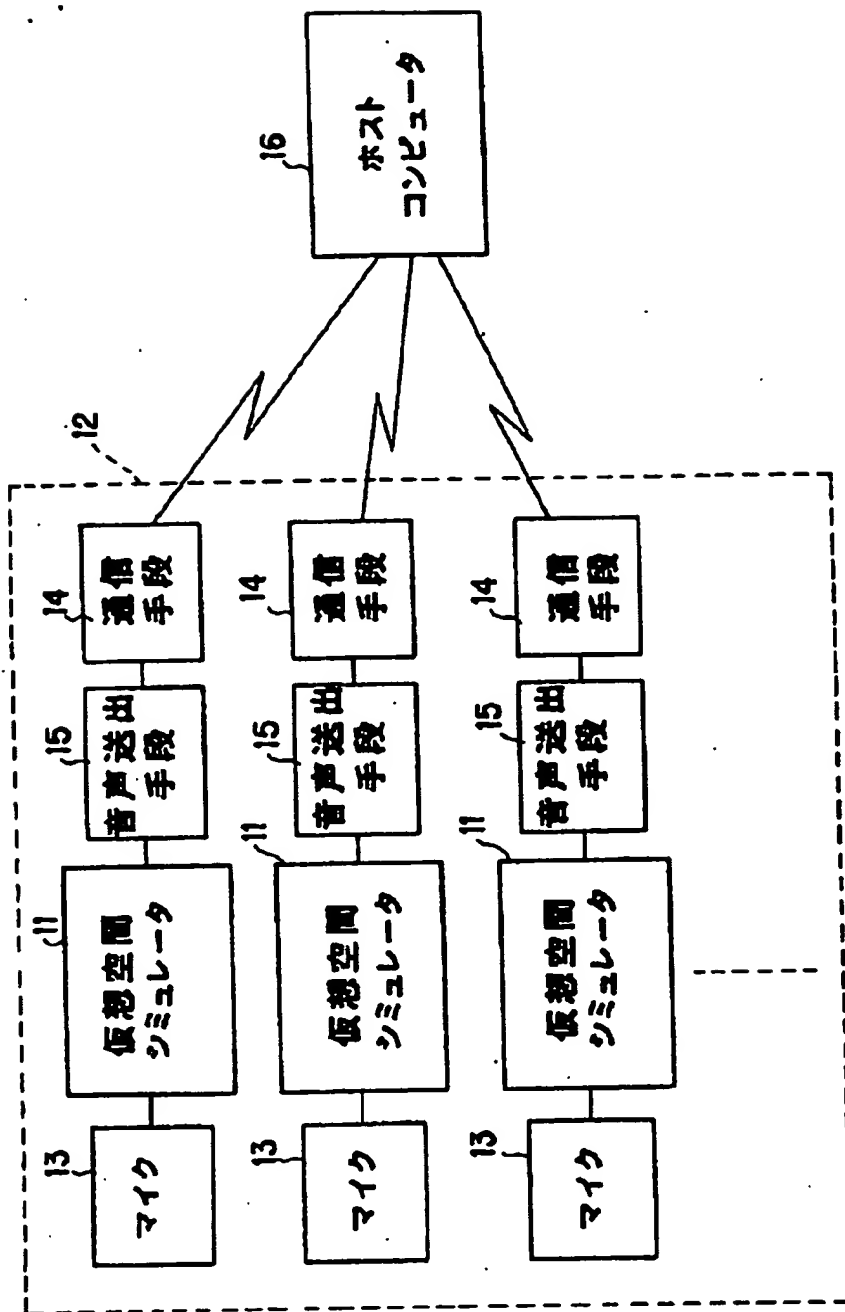
DRAWINGS

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[Drawing 3]

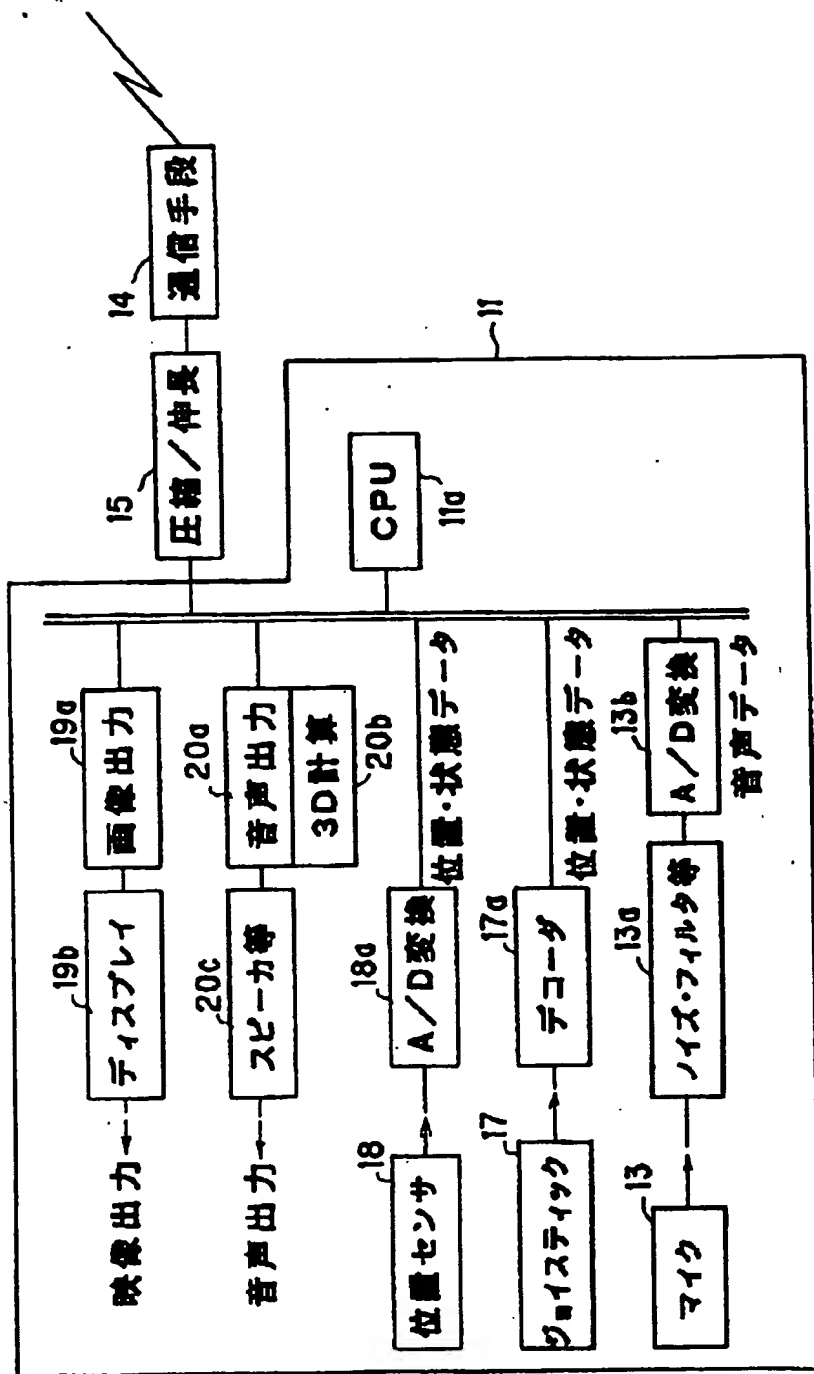


[Drawing 1]

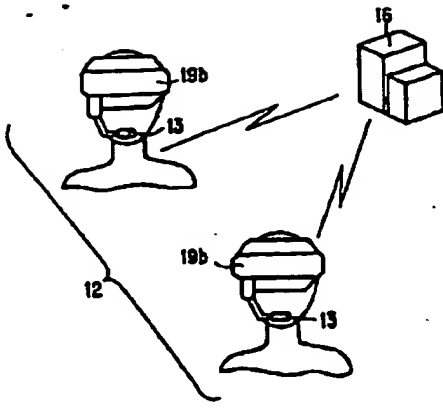


[Drawing 2]





[Drawing 4]



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